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Artystone bolivianensis n.sp. (Isopoda, Cymothoidae) from a loricariid catfish of the Bolivian Amazon

by

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Abstract

Artystone bolivianensis n.sp. (Isopoda, Cymothoidae) from the body cavity of a Bolivian freshwater fish, *Otocinclus vestitus* COPE, (Loricariidae) is described. The new species most closely resembles *Artystone minima* THATCHER & CARVALHO, 1988, from the body cavity of *Nannostomus beckfordi* GÜNTHER, (Lebiasinidae) from the upper Rio Negro of Brazil. Although the two species are of similar size, the new species differs in having adult females that are about 25 % wider and more sparsely pigmented. Males of the new species are slender but have a pleon that is wider in relation to the pereon than is the case in males of the other species. The two species are from different host fish, representing two unrelated families and they are from widely separated geographic areas.

Keywords: **Isopod, cymothoid, parasite, loricariid, catfish, Amazonia, Bolivia.**

Resumo

Artystone bolivianensis n.sp. da cavidade peritoneal dum peixe d'água doce de Bolivia, *Otocinclus vestitus* STEINDACHNER, (Loricariidae) é descrita. A nova espécie parece mais com *Artystone minima* THATCHER & CARVALHO, 1988, da cavidade peritoneal de *Nannostomus beckfordi* GÜNTHER, (Lebiasinidae) do alto Rio Negro no Brasil. Embora ambas espécies sejam dum tamanho semelhante, a nova espécie distingue-se em ter fêmeas adultas que são 25 % mais largas e com menos pigmentação. Machos da nova espécie são menos largos que as fêmeas e têm um pleon que é mais largo em relação ao pereon que é o caso nos machos da outra espécie. As duas espécies são de hospedeiros diferentes representando duas famílias de peixes e procedem de áreas geográficas bem separadas.

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Introduction

In South American freshwater fishes there are two genera of cymothoids that penetrate into and live in the peritoneal cavities of their hosts. These are: *Artystone* SCHIÖDTE, 1866, with the species *A. trysibia* SCHIÖDTE, 1866, and *A. minima* THATCHER & CARVALHO, 1988; and *Riggia* SZIDAT, 1948, which includes *R. paranensis* SZIDAT, 1948, BASTOS & THATCHER, 1997, *R. brasiliensis* SZIDAT & SCHUBART, 1960 and *R. nana* SZIDAT & SCHUBART, 1960. The basic difference between these two genera is that species of *Riggia* have the pleon and pleotelson fused into a single unit whereas in those of *Artystone* these segments are free and not fused. This character only appears in adult females of *Riggia*, however, and is not always easy to interpret. This is because even in specimens having these segments fused, the lines marking the divisions between the pleonites can frequently be observed.

Artystone trysibia SCHIÖDTE, 1866, the type species of the genus, was described on the basis of a single female specimen measuring 20 x 18 mm collected in Argentina. The same author made other observations on the same female in 1868 and a second specimen was described and figured by SCHIÖDTE & MEINERT in 1884. This species has since been reported from Paraguay, Brazil, Venezuela and Guyana (VAN NAME 1936; LEIGH-SHARPE 1937; LEMOS DE CASTRO & MACHADO FILHO 1946; BOWMAN & DÍAZ-UNGRÍA 1957, and WEIBEZAHN & RAMIREZ 1957).

In 1988, THATCHER & CARVALHO described a species measuring only 3-7 mm in length that was found in the body cavities of the ornamental pencil fish, *Nannostomus beckfordi*, taken on the Rio Negro, Amazonas State, Brazil. They called the species *Artystone minima* because of its small size. Another small species has now been found in a small loricariid catfish from Bolivia and this is described herein.

Material and methods

Preserved specimens of fishes were examined in the Museum für Naturkunde, Zentralinstitut der Humboldt-Universität zu Berlin, Germany, for the presence of cymothoids. The isopods were dissected from the body cavities of their hosts and preserved in 70% ethanol. Appendages were removed by means of dissecting needles under a dissecting microscope. Temporary mounts of appendages were made and studied in phenol. Drawings were made with the aid of a camera lucida and by projection of photographic negatives. Measurements are indicated as either millimeters (mm) or micrometers (μm) and the extremes are followed by the means in parentheses.

Systematic Section
Isopoda
Flabellifera
Cymothoidae
Artystone bolivianensis n.sp.

Host: *Otocinclus vestitus*; Loricariidae.

Site: Peritoneal cavity and males were also found between dorsolateral plates.

Locality: Rio Madeira drainage, North of Santa Cruz de la Sierra, Bolivia.

Prevalence: 23/28 (82 %) in fish measuring from 18.7 - 25.2 mm standard length.

Intensity: 1 - 4 cymothoids/fish (females were usually accompanied by a male and in one fish of 22.5 mm standard length a female was found with three males).

Holotype (female): Crustacean collection; "Instituto Nacional de Pesquisas da Amazônia" (INPA), Manaus, Amazonas, Brazil. Allotype (male) and Paratypes (2 females and 4 males); Crustacean collection of INPA. Additional paratypes (2 females and 6 males) deposited in the Museum für Naturkunde (ZMB 27281) Berlin, Germany.

Etymology: The specific name is in reference to the country of origin of the specimens.

Species diagnosis (based on 5 females and 10 males: measurements of 3 females and 5 males in Table 1). Female (Figs. 1-3 & 6): body about 1.5 (1.3-1.6) times longer than wide; widest at level of pereonites 3 or 4; pereon convex, highest at pereonite 4; coloration pale cream with sparse rounded black melanophores. Cephalon not immersed in pereonite 1, pointed forward, frontal margin rounded. Antennae (Fig. 12) slightly longer than antennules (Fig. 11); each with 8 articles.

Mouthparts: Mandibles, simple, elongate, rounded, with laterally directed spinules distally, palp of three articles, longer than mandible (Fig. 13); maxillae with 4 recurved terminal spines (Fig. 15); maxillules with 5 recurved spines, 3 terminal and 2 subterminal (Fig. 14); maxilliped with bilobed palp (Fig. 16).

Pereonites: first longer than others, 2 and 3 subequal, 4 to 7 of decreasing length; coxae short, mostly fused to respective pereonites.

Pereopods (Figs. 17-23): 1-6 subequal in length, provided with stout, curved, hook-like dactyls; 7 longer than others, dactyl small simple. Simple and bifid spines present on most pereopods.

Pleon less than one-half as wide as pereon, articles not fused; few melanophores present, laterally and on midline. Pleopods (Figs. 24-28) simple, bilaminate, endopods smaller than exopods. Uropods (Fig. 8) with endopods shorter than exopods.

Male (Figs. 4-5): body smaller than female, more slender, pleon only slightly narrower than pereon, with little pigmentation; pleopod 2 with well developed cylindrical appendix masculinum (Fig. 29); uropod (Fig. 7) with tapered exopod, both rami provided with terminal setae.

Discussion

Artystone bolivianensis n.sp. resembles *A. minima* THATCHER & CARVALHO, 1988, in size but the two species differ in a number of respects. Adult females of the new species are much wider (width = 65 % of length vs 50 % for *A. minima*). There are fewer melanophores in both sexes of the new species and these are almost completely lacking on the dorsum of the pleon (see Figs. 5 & 6 compared to 9 & 10). The pleon is wider in relation to the pereon in *A. bolivianensis* n.sp. In male specimens, the pleon is about 77 % as wide as the pereon (Fig. 5) whereas in *A. minima*, it is only about 55 % (Fig. 9). Additionally, the two species are from different Orders of fish hosts and from widely separated geographical areas.

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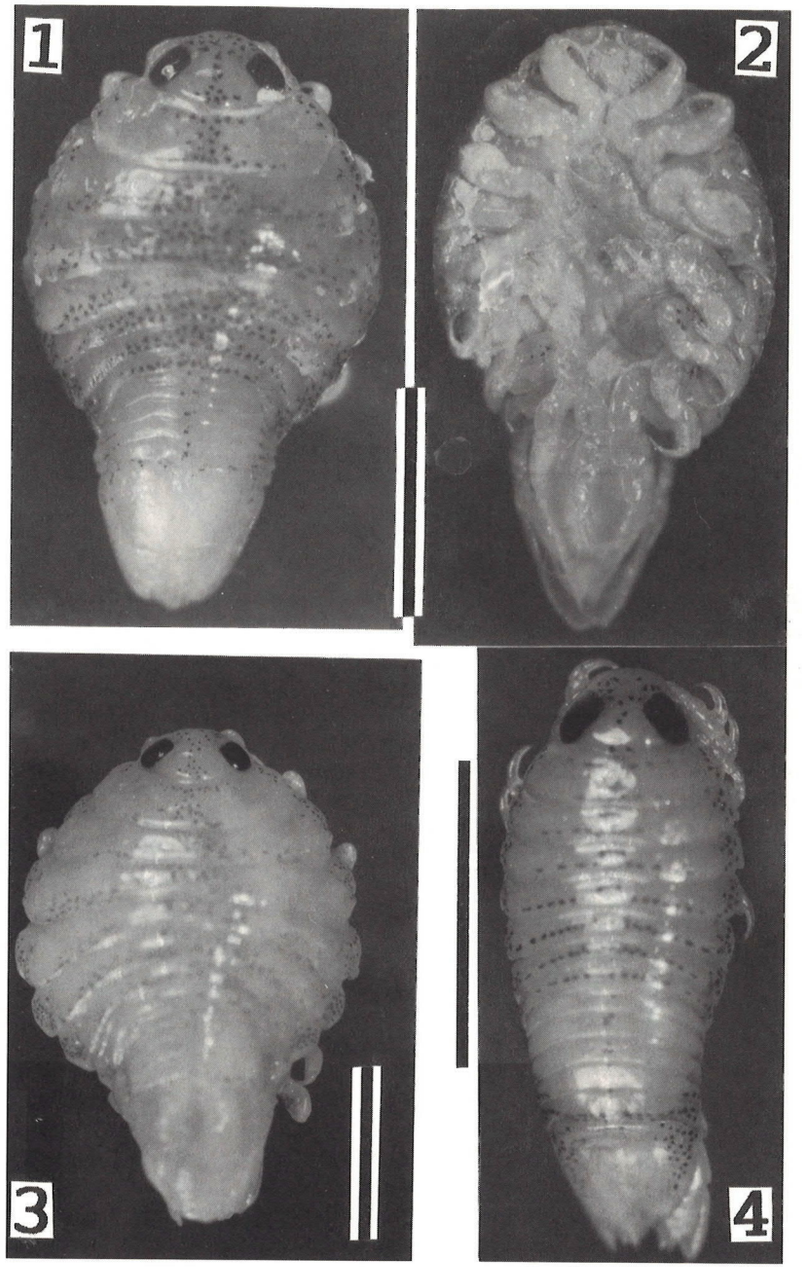
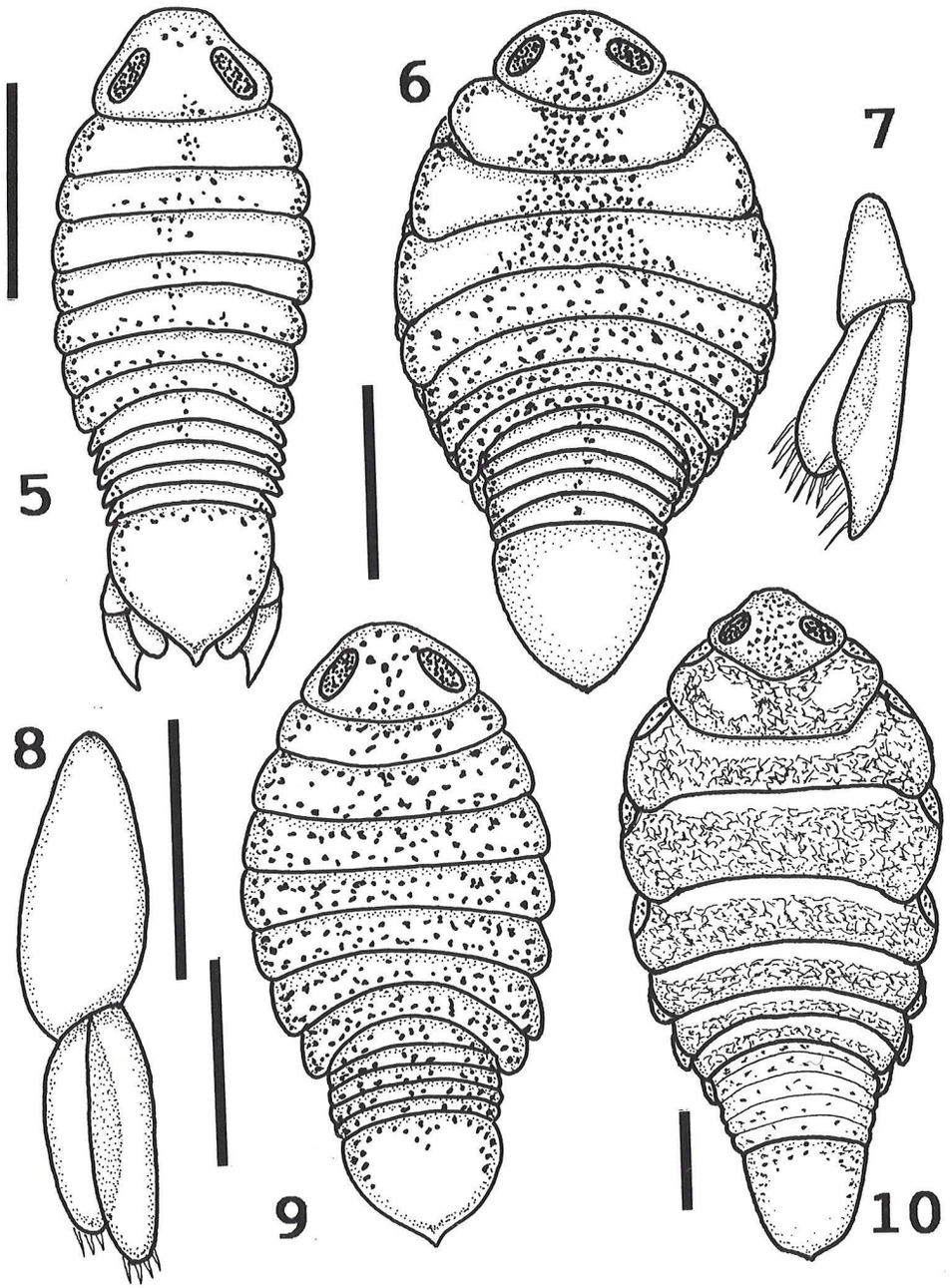
Table 1: Measurements (mm) 3 females and 5 males of *Artystone bolivianensis* n.sp.

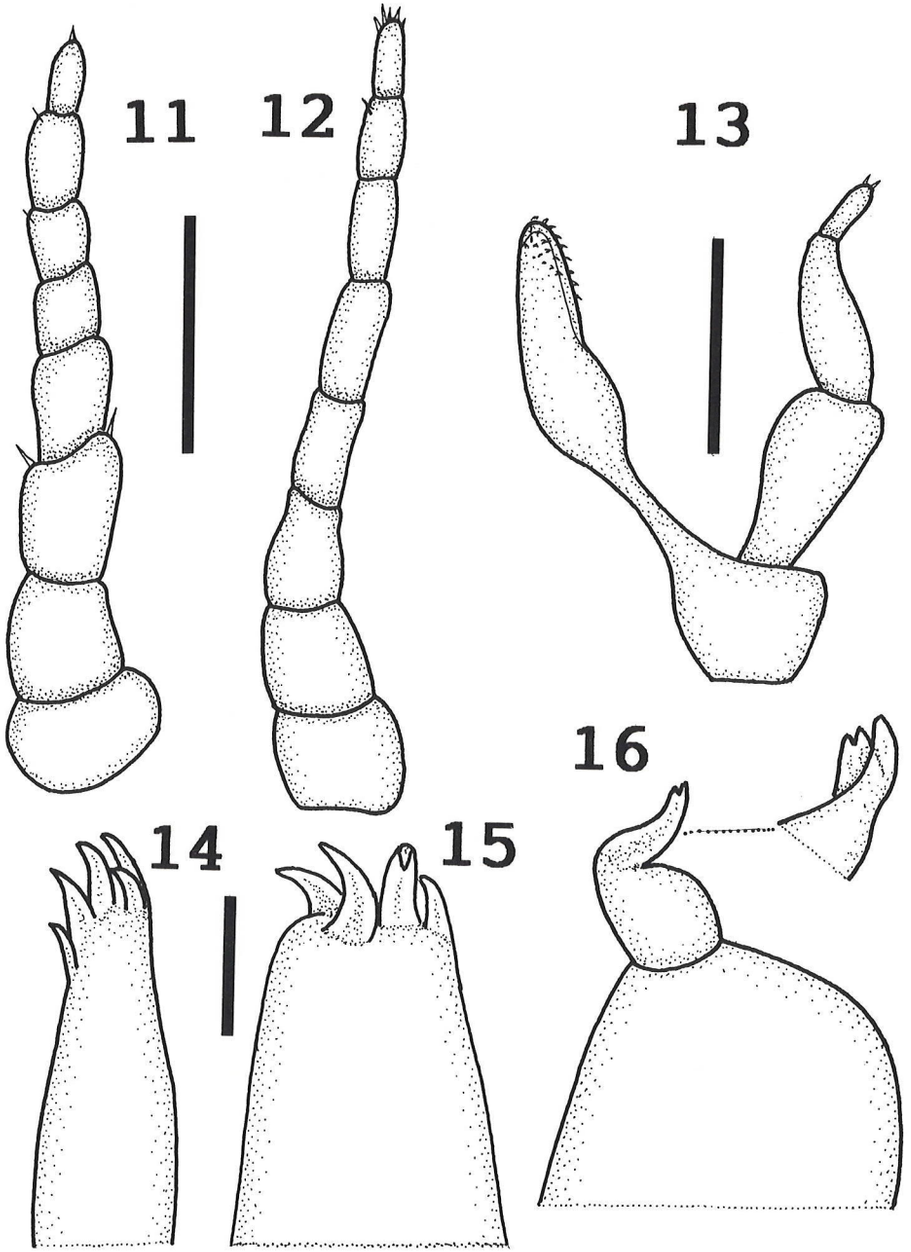
Length	Width
Females	
6.2	4.0
5.7	3.5
5.2	3.9
Males	
4.5	1.9
4.1	1.9
4.0	1.8
3.8	1.7
2.5	1.2



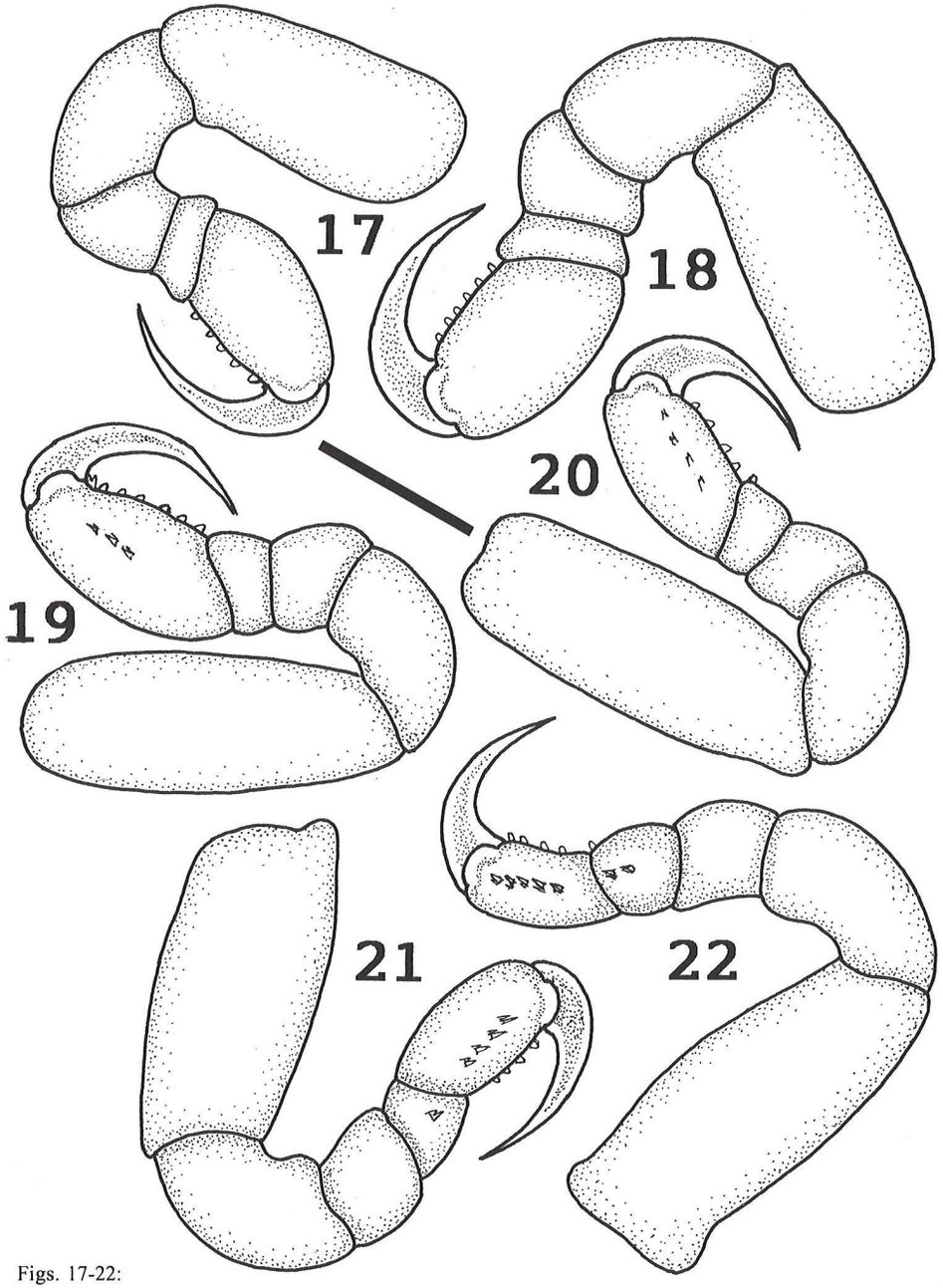
Figs. 1-4:
Artystone bolivianensis n.sp.
1: Female, dorsal view. **2**: Same female, ventral view. **3**: Different female, dorsal view. **4**: Male, dorsal view. All scale bars = 2 mm.



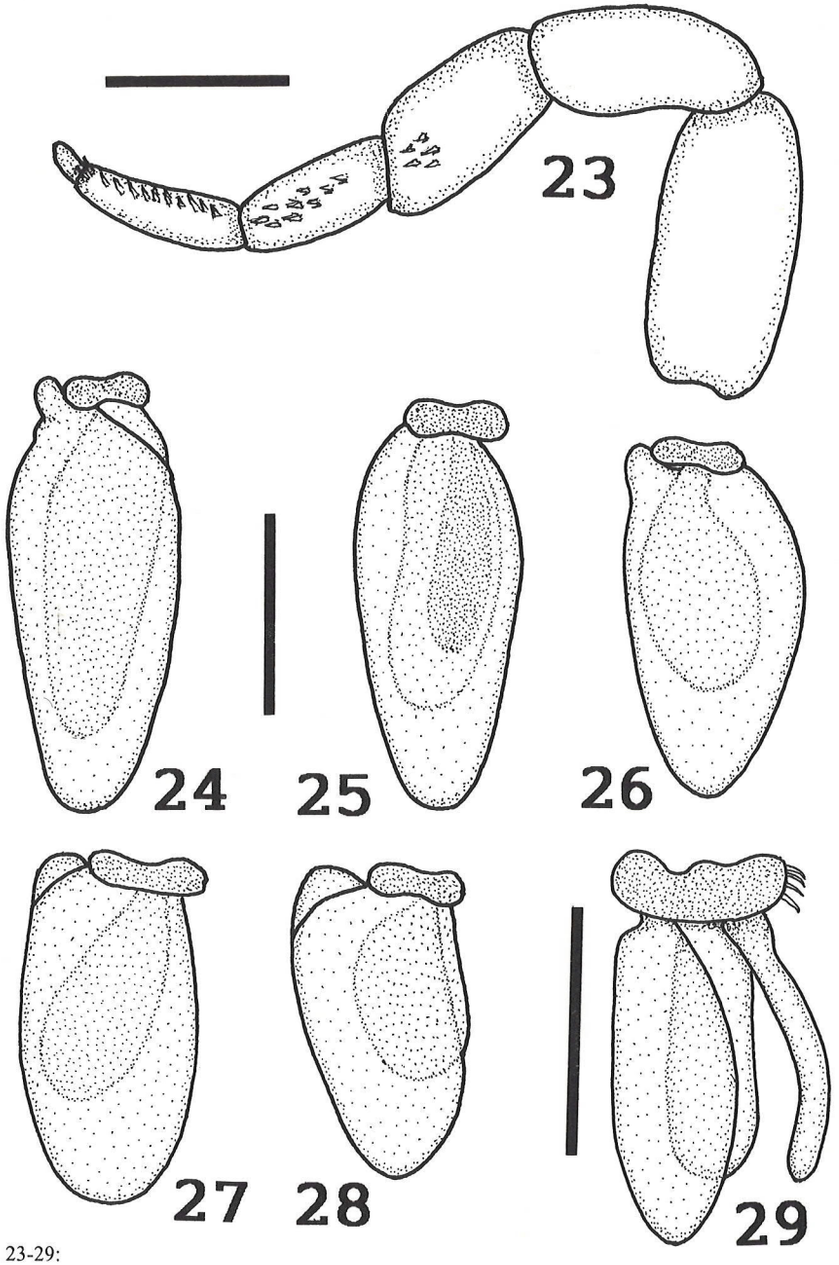
Figs. 5-10:
5-8:*Artystone bolivianensis* n.sp.
5: Male, dorsal aspect. **6**: Female, dorsal aspect. **7**: Male uropod. **8**: Female uropod.
9-10: *Artystone minima*.
9: Male. **10**: Female. All scale bars = 1 mm.



Figs. 11-16:
Artystone bolivianensis n.sp.
11: Antennule. **12**: Antenna. **13**: Mandible and palp. **14**: Maxillule. **15**: Maxilla. **16**: Maxilliped.
Scale bars for 11, 12, 13, & 16 = 250 μm; 14 & 15 = 50 μm.



Figs. 17-22:
Artystone bolivianensis n.sp.
17: Pereopod 1. **18**: Pereoped 2. **19**: Pereopod 3. **20**: Pereopod 4. **21**: Pereopod 5. **22**: Pereopod 6.
Scale bar = 500 μm.



Figs. 23-29:
Artystone bolivianensis n.sp.
23: Peropod 7; Scale bar = 500 μm.
24-28: Female pleopods.
24: Pleopod 1. **25**: Pleopod 2. **26**: Pleopod 3. **27**: Pleopod 4. **28**: Pleopod 5. Scale bar = 1 mm.
29: Male pleopod 2 showing appendix masculinum. Scale bar = 500 μm.